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Teachers' Estimates of the Quality of Specimens of Handwriting

By

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TEACHERS COLLEGE RECORD

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No. 5

TEACHERS' ESTIMATES OF THE QUALITY OF SPECIMENS OF HANDWRITING

It is the purpose of this number of the RECORD to provide teachers with means of making their "marks" or estimates or measurements of handwriting more accurate and more useful. Definite experiments will be described and the materials for them furnished, so that any teacher who follows the directions given may learn how good (or bad) a judge of handwriting he now is, and may, whether good or bad, improve his judgment in this respect.

A specimen of handwriting should be judged both quantitatively and qualitatively—both as to the speed with which it was produced and its quality. The speed with which it was produced is measurable, of course, by the number of letters written per unit of time. A test of handwriting should ordinarily be made by having the pupil write some material that he knows perfectly, such as a well-learned poem or the series "one, two, three, four, five, six, seven, etc.," or the series "Monday, Tuesday, Wednesday, etc.," repeated as required. Four minutes is a suitable time. For tests of the ease of production longer periods should be used, though it should be noted that long-continued writing by hand very rarely is required by modern industry, business or professional work. For a measure of the total efficiency of a pupil at handwriting, the speed and the ease of production should be combined with the quality of

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Then the carelessly dressed gentlemen
stepped lightly into Warren's carriage -
and held out a small card John -
vanished behind the bushes and.

FIG. 1

the product produced. We are here to be concerned, however, only with the quality of the product irrespective of the rate at which it was written or the strain of writing it.

For estimating the progress a pupil has made, or for comparing facts about him with similar facts about other pupils, the conditions under which he produces the product would need to be known. The specimen of Fig. 1, for example, would be an extraordinarily excellent achievement for an eight-year-old child writing eighty letters a minute in a very bad light, with a pen that he was not used to, and would be a very inferior achievement for a twelve-year-old child writing slowly under excellent conditions. Inference about a pupil from a specimen of handwriting may involve many such considerations. With all such conditions of age, grade, illumination, health, zeal, etc., etc., we shall here have nothing to do. We are not now measuring pupils, but simply certain products—specimens of handwriting—for their quality alone, regardless of the conditions of their production. For that purpose we do not even have to know whether a specimen of writing was made by a man or a dog, with hand or with foot, at a rate of two or two hundred letters per minute, with a pen or with a stick.

PROBLEM I

For a teacher to discover just how accurate his present unaided judgment of the quality of handwriting is.

In order to enable a teacher to discover how good or bad his present judgment of handwriting is I have arranged the following experiment.

Call a practically perfect specimen of handwriting 99, and a handwriting of which no single letter can be read (like Fig. 2, page 4) zero. Examine the fifty specimens 5, 8, 9, 11, 22, 25, 256 (after page 8), and give each the grade between 0 and 99 that you think it deserves without consulting anything in the way of aids. Enter these grades on Record Sheet A after p. 4 (which may be cut out to be so used) or on a copy of it, in the column headed "value assigned by unaided judgment." When all fifty have been so graded and entered, turn to Table I, page 11, and enter on your record sheet the

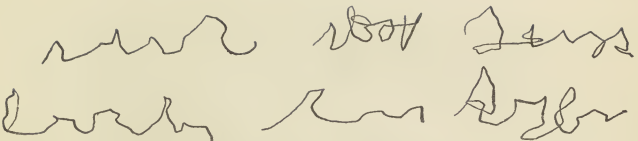


FIG. 2. Representing zero merit in handwriting. Zero merit is arbitrarily defined as that of a handwriting, recognizable as such, but yet not legible at all and possessing no beauty.

RECORD SHEET A

RECORD SHEET A
FOR USE WITH PROBLEMS I, II, AND III

1	2	3		4	5	6	
Specimen's Identification Number	Value (0-99) assigned by unaided judgment	Difference between value assigned in Column 2 and true value		Value (40 to 180) assigned by the aid of the Thorndike Scale	The values of Column 4 $\times 1.5$	Difference between value assigned in Column 3 and true value	
		Minus differences: Estimate too low	Plus differences: Estimate too high			Minus differences: Estimate too low	Plus differences: Estimate too high
5							
8							
9							
11							
22							
25							
27							
29							
33							
34							
36							
37							
39							
41							
46							
50							
53							
57							
119							
134							
201							
202							
203							
206							
207							
208							
209							
211							
212							
213							
214							
215							
216							
221							
222							
223							
225							
226							
227							
229							
230							
234							
242							
244							
245							
247							
249							
250							
255							
256							
Sum of minus differences				Sum of minus differences, Column 6			
Sum of plus differences				Sum of plus differences, Column 6			
Total sum of differences				Total sum of differences, Column 6			

RECORD SHEET B

RECORD SHEET B

1	2	3	4	5	6	7	8
Identification Number of Specimen of Writing	Value (B-18.4) assigned by the aid of the scale before special practice	Differences between value of Column 2 and true value		Differences, Minus and plus, from True Values			
				First round of practice	Second round of practice	Third round of practice	Fourth round of practice
		Minus differences	Plus differences	Minus differences	Plus differences	Minus differences	Plus differences
5							
8							
9							
11							
22							
25							
27							
29							
33							
34							
36							
37							
39							
41							
46							
50							
53							
57							
119							
134							
201							
202							
203							
206							
207							
208							
209							
211							
212							
213							
214							
215							
216							
215							
216							
221							
222							
223							
225							
226							
227							
229							
230							
234a							
242							
244							
245							
247							
249							
250							
255							
256							
Antithetical sum of differences							

differences between your grade and the true grades there assigned, using a minus sign when your grade is below the true grade, and a plus sign when your grade is above the true grade. Add the amounts of the minus differences. Add the amounts of the plus differences. Add the two sums so obtained, *regardless of signs* (i.e., 124.13 minus diffs. and 162.26 plus diffs. are to give 386.39, not 38.13).

If your final total sum is under 150, you already have excellent standards of quality in handwriting and are very accurate in their use. If your total sum of divergences from the true value is from 150 to 199, you have good standards and are accurate in using them. The higher your sum of differences is above 200, the more you need either some scale of systematized standards of quality to judge handwritings by, or practice in using such a scale, or both.

PROBLEM II

For a teacher to see to what extent the use of a scale or system of standards improves his judgment of the quality of handwriting.

Examine the Scale for Handwriting found in Supplement B. This scale is a series of specimens improving steadily in quality from 4 up to 18. Take specimen 5, of specimens 5, 8, 9, 11, 256 (after page 8), and decide upon the number of the scale between 4 and 18 which seems to you to be nearest to specimen 5 in quality. Pay no attention to any notions you may have about the speed at which it was written, the ease with which it was written or the age or training of the one who wrote it. Simply grade specimen 5 itself by giving it the value 4, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, up to 18.0 which you think best represents its quality. Enter the value that you assign to specimen 5 in the fourth column of Record Sheet A. Judge specimens 8, 9, 11, 22, 25, etc., just as you did Specimen 5, and enter each value in column 4 of Record Sheet A as soon as you decide upon it.

When all fifty estimates are entered, multiply each of them by 5.5, entering the products in column 5 of Record Sheet A. This multiplication can be done very rapidly with the use of Table II, on page 12. Then find the differences between these

values of column 5 and the true values for the specimens given on page 11, and enter these in column 6. Find the sum of the minus differences, the sum of the plus differences and the total sum (regardless of signs).

The decrease of these sums for column 6 below those for column 3 measures the advantage got by using the scale, and by consequently improving one's inadequate standards of the different degrees of merit from 0 to 99.

PROBLEM III

To compare one's accuracy in using the Scale with that of competent teachers in general.

Copy the entries of column 4 of Record Sheet A in column 2 of Record Sheet B (under the heading "Value (0 to 18) assigned by the aid of the Thorndike Scale before special practice"). Find the differences between these values and the true values given on page 11. Enter these differences in column 3 of Record Sheet B. These differences are, it will be noted, the same as those of column 6 of Record Sheet A would be if divided by 5.5. That is, we have now changed to a scale of 0 to 18, instead of one of 0 to 99. All the further estimates of quality will be made in terms of this 0-18 scale. It is in almost every way preferable, and would have been used hitherto except for the unfortunate custom of calling a perfect product 100. This custom of marking within an artificial range of 0 to 100 is in almost every respect inferior to the custom of marking from 0 up in steps of some intelligible and objectively definable unit. The unit of the Thorndike Scale is one-tenth of the difference between the worst and the best writing found in a thousand pupils of grades 4 to 8.

Add the plus differences of column 3 of Record Sheet B. Add the minus differences. Add the two sums, regardless of signs. Divide by 50. The result is the average error made in estimating a sample, unity being one step of the scale (which is approximately one-tenth of the difference between the worst and best writing found among 1,000 children of grades 4 to 8).

Individuals differ in their precision in using the scale. On the average a competent teacher who is without training in

the use of the scale will make an error of nine-tenths of a step in judging a sample. But some such teachers will make an average error of only a little over seven-tenths of a step, while others will make errors nearly twice as large. With practice the judgments of all will become more precise, but those who were most accurate at the start will as a rule retain their relative superiority.

I show the facts in detail for thirty-six teachers in Table III. In Table III, Median Error means the amount of error that a competent teacher will not exceed in half of her judgments. Average error means the average amount of error made. All the facts are for ratings of about 110 specimens without previous experience with the scale.¹

If one makes an average error of .9, then his judgment is about equal to that of the general run of competent teachers. .7, .8, .9, 1.0, 1.1, 1.2 and 1.3 may be called, as results before special training with the scale, excellent, very good, good, upper ordinary, lower ordinary, poor, and very poor.

PROBLEM IV

To improve one's precision in estimating the quality of specimens of handwriting.

To improve the accuracy of our estimates of the quality of handwriting, we may use this same series of fifty specimens, (5, 8, 9, 11, 22 256) whose true values are known.²

These are to be used in this case as follows: Cut them out, write on the back of each its true value as given in the table on page 11. Take a specimen, examine it with the scale in view, and assign to it the value (to the first decimal, e.g., 4, 4.1, 4.2, 4.3, 4.4, etc., up to 18.0) which in your judgment it deserves. Then turn it over, note its true value, and enter on

¹ For the sake of the scientific reader I may add that for individuals 1 to 20 in order the Mean Square Errors were 1.21, 1.17, 1.20, 1.405, 1.37 1.16, 1.15, 1.15, 1.27, 1.17, 1.505, 1.32, 1.39, 1.20, 1.02, 1.27, 1.03, 1.11, and 1.36. These have not been computed for the other sixteen individuals.

² A separate set of these on loose sheets for convenience, with a record sheet for results and a copy of the scale itself, may be obtained by sending 15 cents in stamps to the Bureau of Publications, Teachers College, New York. Ten such sets, with record sheets and scales, will be sent upon receipt of one dollar, and sets in quantities of 50 or more, at the rate of \$8.00 per hundred, carriage extra.

the Record Sheet B, in the column marked Differences Minus or Plus from True Values: First Round of Practice, the amount by which your estimate of its value differed from its true value. Use, —, if you rated it too low, +, if you rated it too high. Thus suppose that you rated Specimen 11 as 15.5. Its true value is 14.0 and you would enter +1.5 on the record sheet.

Do the same with each specimen of the fifty until the column of the record sheet is filled. In the first round take the specimens in the order 5, 8, 9, 11, 22, 25, 27, etc. Add your errors for the first ten, the second ten, and so on, *regardless of their signs* (i.e., +.4, —.2, —.5 and +1.3 are to give a sum of 2.4, not 1.0) and fill the appropriate blanks for entry on the scoring sheet.

Then repeat the grading of the entire fifty, but this time (and in all further practice) taking them in a random order, so as not to be influenced by the entries previously made on the record sheet. Enter each error as before, using the column for the Second Round of Practice. Find as before the sum of your errors for the fifty (regardless of signs). Unless you were at the start highly skilled in judging handwriting, you will find a notable improvement (i.e., reduction in the average error) of the first round over the preliminary ratings of column 2 (Record Sheet B), of the second round over the first round, and of the last twenty of the first round over the first twenty.

Practice may be continued for a third, fourth, and fifth round or until the true values of some of the specimens come to be remembered. After that point, of course, any reduction in errors would be a mixture of improved judgment and special memories about these particular specimens.

PROBLEM V

To measure the effect of the practice in judging the fifty specimens (5, 8, 9, 11, etc.) upon ability to estimate specimens of different size and of different style.

To make the experiment of Problem IV still more instructive a teacher may measure his ability with another set of specimens of a different sort *before* and *after* the practice just

SUPPLEMENT A

Fifty Specimens of Handwriting

(5, 8, 9, 11, 22, 25 . . . 256)

and held out a small card. John
vanished behind the bushes and the
carriage moved along down the

The audience of passers-by which had
been gathering about them melted away
in an instant leaving only a poor old
carriage and held out a small card.
John vanished behind the bushes, and
the carriage moved along down

Then the carelessly dressed man
stepped lightly into Warren's
carriage and held out a small
card. John vanished behind the

which had been gathering about them melted
away in an instant leaving only a poor
old lady on the curb. Albert was sadly
striding

way The audience of passers-by
which had been gathering

Then the carelessly dressed
gentlemen stepped lightly into
Warren's carriage and held out

them stepped lightly into War-
ren's carriage and held out a

Then the carelessly dressed gentleman stepped
lightly into Warren's carriage and held out a
small card. John vanished behind the bushes

in an instant leaving only a poor old lady
on the curb. Albert was sadly striding across
the field stopping now and then to look
back at the village or staring at the bit of paper.

Then the carelessly dressed gentleman
stepped lightly into Warren's
carriage and held out a small

Then the carelessly dressed man
stepped lightly into Warren's carriage
and held out a small card. John van-

Then the carelessly dressed gentle-
man stepped lightly into Warren's

bushes, and the carriage moved
along down the drive way. The
audience of passers-by which

Then the carelessly dressed gentleman
stepped lightly into Warren's carriage and
held out a small card. John vanished

Then the carelessly dressed
gentleman stepped lightly into Warren's
carriage and held out a small

1092 Then the carelessly dressed
gentleman stepped lightly into
Warren's carriage and held out a

Then the carelessly dressed
gentleman stepped lightly into
Warren's carriage and held

215 bushes and the carriage moved
along down the driveway. The
audience of passers-by which
had been gathering about them

216 Then the carelessly dressed gentle-
men stepped lightly into Warren's
carriage and held out a small
card, John vanished behind the

221 away in an instant leaving only
a poor old lady on the curb.
Albert was sadly striding
across the field stopping

222 audience of passers-by which
had been gathering about them
melted away in an instant leaving
only a poor old lady on the curb.

223 down the driveway. The audience of passers
by which had been gathering about them
melted away in an instant leaving only a
poor old lady on the curb. Albert was sadly

225 by which had been gathering about them
melted away in an instant leaving
across the field stopping now and then
to look back at the village or staring

226 in an instant leaving only a poor old lady
on the curb. Albert was sadly striding across
the field stopping now and then to look back
at the village or staring at the bit of paper

227 about them melted away in
an instant leaving only a poor
old lady on the curb. Albert was
sadly striding across the field

229 Then the carelessly dressed gentlemen
stepped lightly into Warren's carriage
and held out a small card, John vanished
behind the bushes and the carriage moved
along down the driveway. The audience

230 along the driveway. The audience of
passers by which had been gathering
about them melted away in an instant
leaving only a poor old lady on the

234 Everybody should know the
correct forms demanded by the courtesies
of social and business life, and be able
to give them written expression with grace

242 John vanished behind the bushes
and the carriage moved along
down the driveway. The aud-
ience of passers by which had

244 Then the carelessly dressed gentleman
stepped lightly into Warren's carriage
and held out a small card, John vanished
behind the bushes and the carriage

245 The carelessly dressed gentleman stepped
lightly into Warren's carriage and held out
a small card, John vanished behind the
bushes and the carriage moved along the

247 Then the carelessly dressed gentleman
stepped lightly into Warren's carriage
and held out a small card, John
vanished behind the bushes and the

249 Then the carelessly dressed gentleman
stepped lightly into Warren's carriage
and held out a small card, John van-
ished behind the bushes and the car-

250 along down the driveway. The
audience of passers-by which had
been gathering about them melted
away in an instant leaving a poor

255 and held out a small card, John van-
ished behind the bushes and the car-
riage moved along down the driveway.
The audience of passers-by which

256 held out a small card, John
vanished behind the bushes
and the carriage moved a-
long down the driveway.

described. I have provided two such sets—one a set of forty specimens of very small writing (72, 73, 74, etc.), the other a set of forty specimens of writing by children and adults mostly after the style of the Palmer System (501, 504, 506, etc.). These should be examined and rated by the scale (to a first decimal) just as directed on page 7, and the ratings entered in the appropriate places on the Record Sheets C and D after p. 12. The reader will not find the true values for any of these eighty specimens, as they have not been so standardized as yet. He will therefore enter his estimate itself, not the difference between it and the true value. If he will then send the scoring sheet with these ratings to me (E. L. Thorndike, Teachers College, Columbia University, New York), I will later return this scoring sheet with the true ratings attached. He can thus measure the effect of the training in judging vertical and slant writings of ordinary size in improving his judgment of small-sized writing and writing of the Palmer style, by comparing the sums of differences before and after the special practice with the 5, 8, 9, 22 series.

PROBLEM VI

The number of measures of handwriting necessary to get a sufficiently accurate measure of the quality of writing of an individual and of a class.

The facts given in Table III on page 13 show that a single teacher's judgment of a specimen of handwriting will on the average place it .9 of a step away from its true value. It is also the case that the true value of a single specimen of a pupil's handwriting will not exactly tally with the true value of his average writing (say, the value of the specimens produced on ten successive days). To measure the quality of his handwriting precisely, there should be at least four specimens produced on four different days, each being judged by a different teacher or other competent person. The average of four such estimates will place pupils with few exceptions within two thirds of a step of their true place on the scale. For almost every purpose for which measurements of the quality of handwriting are needed in schools, civil service examinations, tests of fitness

for clerical work and the like, this degree of precision will be sufficient.

When it is desired to compare *one class with another*, or a *class at one time* with the *same class later*, very much greater precision can be attained. The average for a class of 36 when measured as directed in the previous paragraph will with few exceptions be within one-ninth of a step of the true average for the class. Indeed, if the 144 specimens are divided at random into four groups, and each of the four teachers judges only one group, the average result will be precise enough for almost any purpose for which measurements of the ability of a class as a whole are made in schools.

In any case the measurements made with the scale, even by teachers untrained in its use, will be more precise than the marks now commonly given. If the teachers are given, say, three hours of practice in the use of the scale, there will be a further gain in precision.

SUPPLEMENT B

Thorndike Scale for Handwriting of Children
in grades 5 to 8

A SCALE FOR HANDWRITING OF CHILDREN IN GRADES 5 TO 8

The unit of the scale equals approximately one-tenth of the difference between the best and worst of the formal writings of 1,000 children in grades 5-8. The differences 16-15, 15-14, 14-13, etc., represent equal fractions of the combined mental scale of merit from 23 to 55 competent judges.

Quality 18. Sample 125

showed that the rise and fall of the tides
the attraction of the moon and sun upon

Quality 17. Sample 141

Then the carelessly dressed gentleman,
stepped lightly into Warren's carriage and
held out a small card, John vanished be

Quality 16. Samples 32 and 84

Then the carelessly dressed gentle-
man stepped lightly into Warren's
carriage and held out a small

gentleman stepped lightly into
Warren's carriage and held out
a small card, John vanished

held out a small card, John vanished behind
the bushes and the carriage moved along
down the driveway. The audience of passers-

Quality 15. Samples 47 and 96

John vanished behind the bushes
and the carriage moved along
down the driveway. The audience

Then the carelessly dressed gentle-
man stepped lightly into Warren's
carriage and held out a small white

Quality 14. Samples 54 and 19

Then the carelessly dressed gentleman
stepped lightly into Warren's carriage and
held out a small card, John vanished behind

Quality 13. Samples 55, 24 and 26

Then the carelessly dressed gentleman stepped
lightly into Warren's carriage and held out a
small card, John vanished behind the bushes and the car-
riage moved along down the driveway.
The audience of passers-by which had

Then the carelessly dressed gentleman
stepped lightly into Warren's carriage and

Quality 13. Sample 4

Then the carelessly dressed
gentleman stepped lightly
into Warren's carriage and

Quality 12. Sample 30

lightly into Warren's carriage and held out a
small card, John vanished behind the bushes
and the carriage moved along down the drive-

behind the bushes and the carriage moved along down the driveway. The audience of passers-by

Then the carelessly dressed gentlemen stepped lightly into Warren's carriage and held out a small card, John vanished behind the bushes and the

riage moved along down the driveway. The audience of passers-by which had been gathering about them melted away

along the down the driveway. The audience of passers-by which had been gathering about them

John vanished behind the bushes and the carriage moved along down the driveway. The audience

driveway. The audience of passers-by, which had been gathering about them melted away in an instant leaving only a poor old lady on the curb. Albert was sadly striking

Then the carelessly dressed gentlemen stepped lightly into Warren's carriage and held out a small card, John vanished behind the by which had been gathering about them melted away in an instant leaving only a poor old lady on the curb. Albert was sadly

Then the carelessly dressed gentleman stepped lightly into Warren's carriage moved and held out a small card, John vanished

moved along down the driveway. The audience of passers-by which had been gathering about them melted away.

Then the carelessly gentleman stepped lightly into Warren's carriage and held out a small card, John vanished behind the bushes and the carriage moved

card, John vanished behind the bushes and the carriage moved

gathering about them melted away in an instant leaving only a poor old lady

bushes and the carriage moved along down the driveway. The audience

seated on the curb was my driver and



TABLE I

TRUE VALUE OF SPECIMENS 5, 8, 9, 11 256

	On Scale of 0-18	On Scale of 0-99		On Scale of 0-18	On Scale of 0-99
5.....	11.7	64	208.....	8.5	47
8.....	12.8	70	209.....	6.8	37
9.....	13.2	73	211.....	7.2	40
11.....	14.0	77	212.....	10.5	58
22.....	8.3	46	213.....	12.6	69
25.....	12.7	70	214.....	11.5	63
27.....	15.5	85	215.....	15.5	85
29.....	15.4	85	216.....	15.7	86
33.....	15.8	87	221.....	10.2	56
34.....	9.2	51	222.....	8.8	48
36.....	11.5	63	223.....	9.5	52
37.....	16.4	90	225.....	6.8	37
39.....	15.3	84	226.....	7.8	43
41.....	10.6	58	227.....	8.5	47
46.....	12.4	68	229.....	5.8	32
50.....	12.2	67	230.....	13.5	74
53.....	13.5	74	234.....	17.5	96
57.....	15.2	84	242.....	12.5	69
119.....	5.5	30	244.....	14.8	81
134.....	15.2	84	245.....	8.8	48
201.....	9.2	51	247.....	13.8	76
202.....	8.8	48	249.....	12.3	68
203.....	13.5	74	250.....	14.7	81
206.....	13.7	75	255.....	14.6	80
207.....	9.8	54	256.....	14.2	78

[illegible]

RECORD SHEETS C AND D

RECORD SHEET C
RECORD SHEET D

Specimen Identification Number	Value assigned by Thorndike Scale		Specimen's Identification Number	Value assigned by Thorndike Scale	
	Before training with S, S, etc.	After training with S, S, etc.		Before training with S, S, etc.	After training with S, S, etc.
72			501		
73			502		
74			504		
75			506		
76			508		
77			509		
78			513		
79			514		
80			515		
81			516		
82			522		
83			526		
85			539		
86			542		
87			543		
88			545		
89			547		
91			548		
92			549		
93			554		
94			557		
95			579		
96			618		
97			639		
98			707		
99			732		
101			772		
102			817		
103			3120		
104			3138		
106			3149		
107			3151		
108			3153		
109			3154		
110			3155		
111			3173		
112			3208		
113			3210		
114			3213		
115			3997a		

TABLE III

THE ACCURACY OF JUDGMENT OF HANDWRITING IN THE CASE OF COMPETENT
TEACHERS WHO HAD NO PREVIOUS EXPERIENCE
WITH THE USE OF THE SCALE

	Median Error	Average Error		Median Error	Average Error
1.....	.75	.91	21.....	.75	.94
2.....	.75	.88	22.....	.88	.98
3.....	.75	.94	23.....	1.25	1.46
4.....	1.	1.13	24.....	.75	.86
5.....	1.	1.065	25.....	1.	1.32
6.....	.75	.88	26.....	.63	.80
7.....	.75	.87	27.....	.63	.83
8.....	.63	.84	28.....	1.	1.29
9.....	.63	.84	29.....	1.	1.00
10.....	.63	.89	30.....	.5	.73
11.....	.75	.88	31.....	.63	.84
12.....	1.	1.21	32.....	.5	.73
13.....	.63	.87	33.....	.88	.98
14.....	1.	1.10	34.....	1.	1.00
15.....	.63	.88	35.....	.75	.83
16.....	.75	.77	36.....	.63	.82
17.....	.75	.92			
18.....	.75	.79			
19.....	.75	.86			
20.....	1.	1.09			

SUPPLEMENT C

Forty Specimens of Handwriting
(72, 73, 74, etc. Very small writing)

72 held out a small card, John vanished behind the bushes and the carriage moved along down the driveway. The audience

73 a small card, John vanished behind the bushes and the carriage moved along down the driveway. The audience of passers-by

74 and held out a small card, John vanished behind the bushes and the carriage moved along down the

75 Women's carriage and held out a small card, John vanished behind the bushes and the carriage moved along down the driveway. The audience of passers-by which had been gathering about the

76 John vanished behind the bushes and the carriage moved along down the

77 out a small card, John vanished behind the bushes and the carriage moved along down the driveway. The audience of

78 small card, John vanished behind the bushes and the carriage moved along down the driveway. The audience of passers-by which had been gather-

79 card, John vanished behind the bushes and the carriage moved along down the driveway. The audience of passers-by which had been

80 and held out a small card, John vanished behind the bushes and the carriage moved along down the drive-

81 and held out a small card, John vanished behind the bushes and the carriage moved along down the drive-way. The

82 and held out a small card, John vanished behind the bushes and the carriage moved along down the drive-

83 and held out a small card, John vanished behind the bushes and the carriage moved along down the drive-

84 and held out a small card, John vanished behind the bushes and the carriage moved along down the

85 card, John vanished behind the bushes and the carriage moved along down the driveway. The audience of passers-by which had been

86 card, John vanished behind the bushes and the carriage moved along

87 John vanished behind the bushes and the carriage moved along down the driveway. The audience of passers-

88 held out a small card, John vanished behind the bushes and the carriage moved along down the driveway. The audience of passers-

89 and held out a small card, John vanished behind the bushes and the carriage moved down along the driveway. The

90 a small card, John vanished behind the bushes and the carriage moved along down the drive-

91 held out a small card, John vanished behind the bushes and the carriage moved along down the driveway. The audience of passers-by

94 and held out a small card, John van-
ished behind the bushes and the
carriage moved along down the

95 card, John vanished behind the
bushes and the carriage moved
along down the driveway. The

96 and held out a small card, John van-
ished behind the bushes and the
carriage moved along down the drive

97 John vanished behind the bushes
and the carriage moved along down
the driveway. The audience of passers

98 John vanished behind bushes and
the carriage moved along down the
driveway. The audience of passers by

99 and held out a small card, John
vanished behind the bushes and
the carriage moved along down the

100 held out a small card, John vanished
behind the bushes and the carriage
moved along down the driveway. The

101 and held out a small card,
John vanished behind the
bushes and the carriage moved

102 and held out a small card, John vanished
behind the bushes and the carriage moved
along down the driveway. The audience

103 a small card, John vanished behind the bushes
and the carriage moved along down the drive-
way. The audience of passers-by which

104 a small card, John vanished behind
the bushes and the carriage moved along
down the drive-way. The audience of passers

105 and held out a small card, John
vanished behind the bushes and the
carriage moved along down the drive-

106 small card, John vanished behind the bushes
and the carriage moved along down the drive-
way. The audience of passers-by which had been

107 small card, John vanished behind
the bushes and the carriage moved
along down the driveway. The audi.

108 held out a small card, John vanished behind
the bushes and the carriage moved along down
the driveway. The audience of passers-by

109 out a small card, John vanished behind
the bushes and the carriage moved along
down the driveway. The audience of passers

110 held out a small card, John vanished
behind the bushes and the carriage moved
along down the driveway. The audience

111 small card, John vanished behind the bushes
and the carriage moved along down the driveway.
The audience of passers-by which had been

112 small card, John vanished behind
the bushes and the carriage moved
along down the driveway. The

113 Then the carelessly dressed gentle
man stepped lightly into Warren's
carriage and held out a small card,

119 bushes and the carriage
moved along down the driveway.

134 Then the carelessly dressed gentleman
stepped lightly into Warren's carriage and
held out a small card, John vanished be-

201 Then the careless dress gentleman
stepped lightly into Warren's carriage
and held out a small card, John
vanished behind the bushes and

202 Then the carelessly dressed gentleman
stepped lightly into Warren's carriage and
a small card, John vanished behind
bushes and the carriage moved along

203 Then the carelessly dressed
gentleman stepped lightly
into Warren's carriage and
held out a small card, John

206 the carriage moved along down the
driveway. The audience of passers-
by which had been gathering about
them melted away in an instant

207 The audience of passers-by
which had been gathering
about them melted away in
an instant leaving only a

303 moved along down the driveway, the
audience of passers-by which had been
gathering about them melted away
in an instant leaving only a poor

209 at the village or starved at a bit
of paper which he still held in his
hand. He wished to keep his

211 Then the carelessly dressed
gentleman stepped lightly
into Warren's carriage and
held out a small card John

212 The carelessly dressed gentle-
man stepped lightly into
Warren's carriage and held out
a small card John vanished

213 Then the carelessly dressed
gentleman stepped lightly into
Warren's carriage and held out
a small card, John vanished

214 card, John vanished behind the
bushes and moved along down
the driveway. The audience pass-
ersby which had been gathering

SUPPLEMENT D

Forty Specimens of Handwriting

(541, 544, 546, etc. Writing by children and adults
mostly after Palmer System)

501 Then the carelessly dressed gentleman stepped lightly into Warren's carriage and held out a small card. John vanished behind

502 Then the carelessly dressed gentleman stepped lightly into Warren's carriage and held out a small card. John vanished behind the

504 carriage moved along down the driveway. The audience of passers-by which had been

506 down the driveway. The audience of passers-by which had been gathering about them melted away

508 John vanished behind the bushes and the carriage moved along down the driveway. The audience of passers-by

509 John vanished behind the bushes and the carriage moved along down the driveway. The audience of passers-by which had been gathering

513 Then the carelessly dressed gentleman stepped lightly into Warren's carriage and held out a small card. John vanished behind the bushes and the carriage

514 away in an instant leaving only a poor old lady on the curb. Albert was sadly striding across the field stopping now and then to

515 Then the carelessly dressed gentleman stepped lightly into Warren's carriage and held out a small card,

516 an audience of passers-by which had been gathering about them melted away in an instant leaving

522 poor old lady on the curb. Albert was sadly striding across the field stopping now and then to look back at the village or staring

524 behind the bushes and the carriage moved along down the driveway. The audience of passers-by which had been gathering about them melted away in an instant leaving only

539 Then the carefully dressed gentleman stepped
Lithy on Warren's carriage and held out a small card -
John vanished behind the bushes and the carriage

542 Then the carelessly dressed gentlemen
stepped lightly into Warren's carriage and held out
a small card. John vanished behind the

543 the driveway. The audience of
passers-by which had been gathering
about them melted away in an

545 in moved along down
the driveway. The audience
of passers-by which had
been gathering about them

547 Then the carelessly dressed gentleman
stepped lightly into Warren's carriage and
held out a small card, John vanished

548 Then the carelessly dressed
gentleman stepped lightly into

549 Then the carelessly dressed gentlemen
stepped lightly into Warren's carriage and
held out a small card, John vanished

554 Then the carelessly dressed gentleman
stepped lightly in to Warren and held
a small card, John vanished behind

557 Then the carelessly dressed gentleman
stepped lightly into Warren's carriage
and held out a small card, John

579 a small card. John vanished behind the
bushes and the carriage moved along down
the driveway. The audience of passers-by

618 Then the carelessly dressed gentleman
stepped lightly into the Warren's carriage
and held out a small card. John

639 Then the carelessly dressed gentleman
stepped lightly into Warren's carriage
and held out a small card, John

707 Then the carelessly dressed gentleman
stepped lightly into Warren's carriage and
held out a small card, John vanished.

732 leaving only a poor old lady on the
curb. Albert was sadly striding
across the field stopping now and

772 the ladies and the carriage moved along down
the driveway. The audience of passers by
which had been gathering about them melted

817 Then the carelessly dressed gentleman
stepped lightly into Warren's carriage and
held out a small card, John vanished be

Here under leave of
3120 Brutus and the rest
For Brutus is an honor-
able man;

Friends, Romans, and countrymen,
3138 lend me your ears;
I come to bury Caesar not to
praise him

And faint from distance
3149 borne,
Where heard the clanging
hoof and horn,

3151 The stag at eve had drunk
his fill,
Where danced the moon on

3153 The stag at eve had
drunk his fill,
Where danced the moon

3154 The stag at eve had drunk
his fill,
Where danced the moon on

The stag at eve had drunk
3155 his fill,
Where danced the moon on

3173 Recounded up the rocky way,
And faint, from father's dis-
tance born,

Clad in doublet and hose, and
3208 boots of Cordovan leather,
Strode, with a martial air,
Miles Standish, the Puritan

Strode, with a martial
3210 air, Miles Standish,
the Puritan Captain
Buried in thought he

3213 Clad in doublet and hose,
and boots of cordovan leather,
Strode, with a martial air,
Miles Standish the Puritan

3497a commands that we
render obedience to
our parents and to
the laws of the school





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